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09/995,925	11/28/2001	Mark Gagner	2001P22392US	1140

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EXAMINER

CHOW, CHIH CHING

ART UNIT

PAPER NUMBER

2192

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/995,925	Applicant(s) GAGNER, MARK	
	Examiner Chih-Ching Chow	Art Unit 2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>05/12/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to amendment dated August 17, 2005.
2. Per Applicants' request, claims 1, 3-4, 9, and 17-18 have been amended, claims 19 and 20 are new.
3. Claims 1-20 remain pending.

Response to Amendment

4. Applicants' amendment for Claims 1, 3-4, 9, 17-18 and 19-20 have been fully considered respectfully by the examiner but they are not persuasive.

Response to Arguments

5. Applicants' arguments for Claims 1-13, 15-18 have been fully considered respectfully by the examiner but they are not persuasive.

6. Applicants' arguments are basically in the following points:

- Newman's teaching is a simulator, which provides method for ordering computer software procedures in an order in computing machine for modeling each of multiple blocks of a block diagram." (REMARKS page 7, item 2. Newman).

Examiner's Response: In response to applicant's argument that Newman's disclosure is for a simulator. The 'executing a block program' concept is disclosed in Newman's teaching, the intended of use can be different.

- Newman Does Not Disclose Only Executing Blocks in a Block Program that Receives a New Input Value which is Different from a Previous Input Value (REMARKS page 7, item 3. Newman).

Examiner's Response: In response to applicant's argument, please see Newman's column 20, lines 55-58, "In fact, the update state procedure occurs at the end of the

computer program when the inputs to the block are defined by the update output procedures which precede it in the program.” – when the inputs to the block updates, the update state will update the output procedures.

- Cameron Fails to Cure the Deficiencies of Newman, ... claim 14 depends from and incorporates all of the limitations of claim 9 (REMARKS page 8, under item 4)

Examiner's Response: Newman is an analogous prior art, see previous items.

7. The Examiner is maintaining the 35 USC § 102 and the 35 USC § 103 Rejections. For the Applicants' convenience they are listed as following, with the amendments requested by the Applicants.

Claim Objections

8. Claim 20 is objected to because of the following informalities: claim 20 is identical as claim 19. Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-13, 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5, 313,615 by William Newman et al. (hereinafter “Newman”).

CLAIM

1. A controller for executing a block program to control at least one device in a network comprising:
 - a. a block table listing a plurality of records corresponding to a plurality of blocks in the block program provided in said controller;
 - b. a block library provided in said controller for holding a plurality of algorithms associated with said blocks;
 - c. a block execution engine for executing said blocks in said block program in accordance with said associated algorithms; and
 - d. wherein said block execution engine selectively executes said blocks in the block program only when said block execution engine determines a new input value is present which is different from a previous input value to control said at least one device in said network.

Newman

See Newman's abstract, "each block corresponds to a **software procedure** for performing at least one function (*each of the executing function is considered as an algorithm*) and has **at least one input** or at least one output." Also see Newman's figures 3A and 3C, Newman teaches using table listing for blocks in block diagram (*block program*). Further more, see Newman column 3, lines 7-11, "For any time, say T.sub.1 (time), the state at T.sub.1 (that is the state variables) and the input waveforms determine **uniquely the state** at any time T>T.sub.1" also see Newman claim 1, item (a) "generating a list of any said input for each of such blocks" and (c), "processing in the computing machine such input and feed-through lists for the one of the block diagrams for ordering of such procedures and comprising the step of determining the occurrence of a predetermined relation between any said input in the feed-through list and in the input list for one of such blocks in the one block diagram and, the step of selectively, depending on the occurrence of the predetermined relation, ordering one of an update state procedure that corresponds to the same block in the order relative to the other update state and update output procedures so that a representation of the **input for such update state procedure** will have been defined by one of said update output procedures previous in the order." (*a new input value which is different from a previous input value*) and "the state at any time T and the inputs at any time T determine uniquely the output value at time T of the block". For item c, 'block execution engine', see Newman's column

21, lines 6-8, "The steps for sequencing the update output procedures and update state procedures for state blocks are separately controlled by seven sequence controllers", where the sequence controllers function the same as 'control execution engine'.

For item d, see Newman, column 20, lines 55-58, "In fact, the update state procedure occurs at the end of the computer program when the inputs to the block are defined by the update output procedures which precede it in the program." – when the inputs to the block updates, the update state will update the output procedures.

2. The apparatus as defined in claim 1 further including an execution image file for storing descriptions of said blocks and connections between said blocks.

For the feature of claim 1 see claim 1 rejection. The execution image file of current application is defined as claim 13 "execution image file storing said records for said blocks and said connectors." See Newman column 2, lines 28-32, "The netlist is a computer-readable form of the block diagram, **containing all the required information** about the block diagram, such as how the blocks are connected together, the software procedure call the block represents, parameter lists (*descriptions of said blocks and connections between said blocks*), etc", AND Newman column 18, lines 21-23, "The block function type is a computer-language **description of the type of function** (coefficient, "unit" delay, etc.) represented by the block."

3. The apparatus as defined in claim 1 further including means for inputting/outputting data to and from said block execution engine.

For the feature of claim 1 see claim 1 rejection. Also see Fig. 3A for Inputs and Outputs data.

4. The apparatus as defined in claim 1

For the feature of claim 1 see claim 1

wherein each of said records in said block table includes a field indicating whether a corresponding one of said blocks is to be executed by said block execution engine.

5. The apparatus as defined in claim 4 wherein each of said records in said block table further includes,
a field for indicating the type of function performed by said corresponding one of said blocks, and
a field for identifying said corresponding one of said blocks.

6. The apparatus as defined in claim 5 wherein each of said records in said block table further includes,
at least one field for identifying at least one output connector connected to said corresponding one of said blocks,
at least one field for identifying at least one input connector connected to said corresponding one of said blocks,
at least one field for storing an input value of said corresponding one of said blocks, and
an output value field for storing an output value of said corresponding one of said blocks.

7. The apparatus as defined in claim 1 further including a connector table listing a plurality of records of a plurality of connectors for operatively connecting said blocks.

rejection. See Newman's claim 9, "The method of claim 7 wherein the step of processing comprises the step of generating a **sequence list indicative of the order (flag list)** in which such procedures are to be executed."

For the feature of claim 4 see claim 4 rejection. In Newman's FIG. 3A, 3B and 3C, they list fields for indicating the type of function performed (function name) by said corresponding one of said blocks.

For the feature of claim 5 see claim 5 rejection. See Newman's FIG. 3A, it specifies 'output connector' (4th column) and 'input connector' (3rd column), and FIG. 3C, it specifies the 'input value' and 'output value' for each of said blocks.

For the feature of claim 1 see claim 1 rejection. See Newman column 1, lines 54-56, "The system configurator allows a user to specify the **topology** of the proposed system in terms of **interconnected functional blocks**". And column 2, lines 10-13, "The library contains information about each block, including its submodules, connections, documentation and high-level

program code (*connector table listing*), all of which can be made available to the designer through on-line windows.”

8. The apparatus as defined in claim 7 wherein each of said records in said connector table includes a field identifying one of said blocks to which a corresponding connector is connected at a first end, and at least one field for identifying at least one of said blocks to which said corresponding connector is connected at a first end, and at least one second end.

For the feature of claim 7 see claim 7 rejection. For the rest of claim 8 feature see figure 3A-C, and claim 1 rejection.

9. A computer-implemented method for executing a block program for controlling at least one device in a network using a controller, comprising the steps of:

- a. creating a block table of plurality of block records in the controller that correspond to a plurality of blocks used in the block program;
- b. creating a library in the controller for holding a plurality of algorithms for executing functions associated with said blocks;
- c. selectively setting a flag in said block records directly in response to when at least one input value of corresponding said blocks changes; and
- d. executing said algorithms of said blocks in said block program having corresponding block records that have said flag set to control said least one device in said network.

For items a and b, same as claim 1 rejection; for items c and d see claim 4 rejection and Newman column 28, lines 48-51, “Each row of the figure represents a change in the status of either the blocklist pointer, blocklist or sequence list.”

10. The method as defined in claim 9 further including the step of creating a connector table of records that correspond to connectors for operatively connecting

For the feature of claim 9 see claim 9 rejection. For the rest of the claim 10 feature see claim 1 and 2 rejections.

said blocks.

11. The method as defined in claim 10 further including the step of subsequently setting a flag in said records corresponding to said blocks that are connected to at least one output of said blocks that have been executed, if a value of said at least one output of said executed blocks has changed.

For the feature of claim 10 see claim 10 rejection. For the rest of the claim 11 feature see claim 4 and 9 rejections, and Newman column 71, lines 50-53, "During block 994, a variable called 'OUTPUT UPDATED' (*an identification of a connector*) is set equal to the last output on the OLF list. The purpose of this variable is to **flag the last output on the OLF list that has been updated.**"

12. The method as defined in claim 11 wherein said step of subsequently setting said flag includes the steps of obtaining an identification of a connector corresponding to said at least one output of said executed blocks from said block records corresponding to said executed blocks, and obtaining an identification of blocks that are connected to said connector.

For the feature of claim 11 see claim 11 rejection. For the rest of the claim 12 feature see claim 4, 9, and 11 rejections.

13. The method as defined in claim 10, wherein said block table and said connector tables are created from an execution image file storing said records for said blocks and said connectors.

For the feature of claim 10 see claim 10 rejection. For the rest of claim 13 feature see claim 2 rejection.

15. The method as defined in claim 9 wherein said records in said block table are listed in an order corresponding to a predetermined order in which said blocks are adapted to be executed in said block program.

For the feature of claim 9 see claim 9 rejection. For the rest of claim 15 feature see claim 4 rejection.

16. The method as defined in claim 15 wherein said executing step includes a step

Same as claim 15 rejection.

of checking each record in said block table in said listed order for said block records having said flag set.

17. A controller having a block program for controlling at least one device in a control network, comprising:

- a. a block table, provided in said controller, listing a plurality of records corresponding to a plurality of function blocks in the block program, said blocks each having at least one input for receiving an input value and at least one output for outputting an output value;
- b. a connector table listing records of connectors for operatively connecting said blocks;
- c. a block library for holding algorithms associated with said blocks; and,
- d. a block execution engine for executing said blocks in said block program in accordance with said associated algorithms;
- e. wherein said block execution engine selectively executes said blocks in the block program only when said block execution engine determines a new input value is present which is different from a previous input value, wherein at least one device in a control network is controlled in response to said block execution engine selectively executing a block.

18. The controller as defined in claim 17 further including means for inputting data to said block execution engine from the devices and the control network, and outputting data to the devices and the control network from said executing means.

Same as claim 1; in order for Newman's disclosure to work, the block program must contain at least one device in a control network, since it is meant to work for a simulator system.

For the feature of claim 17 see claim 17 rejection. For the rest of the claim 18 feature see claim 1 rejection.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 14, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5, 313,615 by William Newman et al. (hereinafter "Newman"), in view of "Fundamentals of Direct Digital Control Systems" by Jay Santos (hereinafter "Santos").

CLAIM

14. The method as defined in claim 9 wherein said executing step is performed at every predetermined time interval.

Newman / Santos

For the feature of claim 9 see claim 9 rejection. Newman teaches all aspects of claim 14, but he does not mention 'executing step is performed at every predetermined time interval' specifically, however, Santos teaches it in an analogous prior art. In Santos page 2, under 'Sensor', "the controlled medium or other control input in an accurate and repeatable manner. HVAC sensors may measure temperature, pressure, or relative humidity. Some sensors may measure other temperatures, **time of day** (*predetermined time interval*), electrical demand condition, or other variables that affect the controller logic." It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Newman's disclosure of the block program control by the executing programs in predefined time taught by Santos, for the purpose of energy management (see Santos page 1, 2nd paragraph).

19. The controller as defined in claim 1, wherein said controller is for use in an

For the feature of claim 1 see claim 1 rejection. Newman teaches all aspects of

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hvac system.

claim 19, but he does not mention 'use in an hvac' specifically, however, Santos teaches a block programming for an HVAC system in an analogous prior art. In Santos, page 6, under 'Software Characteristics', 3rd item, **"graphical or block programming"**, "Menu-driven, database, or template/tabular programming makes use of templates for **common HVAC** logical functions. These templates contain the detailed parameters necessary for each logical **program block to function**. How one **block** is connected to another or where its data comes from is known as data flow and is programmed in each template." Also see page 3, under 'Two-Position Control', "In a two-position control sequence, the controller compares **an analog or variable input** with instructions and generates a digital (two-position) output. The instructions involve definitions of upper or lower limits. The output changes value as the input crosses the limits." – input changes will trigger the block program to start processing. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Newman's disclosure of the block program control by using it for a HVAC system taught by Santos, for the purpose energy management (see Santos page 1, 2nd paragraph).

20. The controller as defined in claim 1, wherein said controller is for use in an hvac system.

Same as claim 19 rejection.

Conclusion

The following summarizes the status of the claims:

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35 USC § 102 rejection: Claims 1-13, 15-18

35 USC § 103 rejection: Claims 14, 19-20

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Ching Chow whose telephone number is 571-272-3693. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature of relating to the status of this application should be directed to the TC2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chih-Ching Chow

Examiner

Art Unit 2192

October 19, 2005



ANTONY NGUYEN-BA
PRIMARY EXAMINER

CC